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The Journal of The SOUTH CAROLINA Medical Association

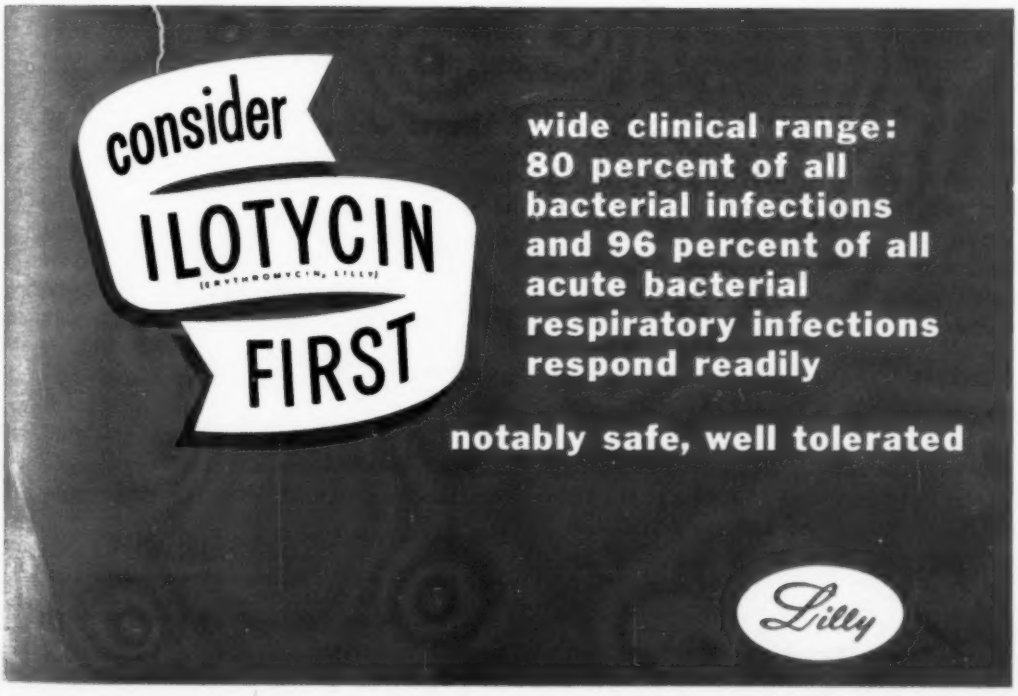
VOLUME LI | MAY, 1955 | NUMBER 5

ANTIBIOTICS

ATOMIC MEDICINE

CARCINOMA OF ILEUM

TRYPSIN IN PERTUSSIS



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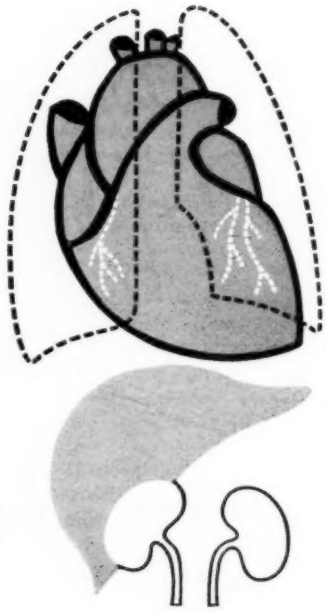

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The Journal
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VOLUME LI | May, 1955 | NUMBER 5

A RESUME OF PRESENT-DAY ANTIBIOTIC THERAPY

WESLEY W. SPINK, M. D.*

In 1937 neoprontosil and sulfanilamide were introduced into the practice of medicine.

It was that year that I went to the University of Minnesota, and what I should like to do this morning in fifteen minutes is to sort of crystallize some ideas pertaining to antibiotic therapy as seen mainly in that institution. In trying to do that in fifteen minutes. I realize brevity may give way to dogmatism, and I am sure that there will be some clash of opinion. However, I simply want to tell you what our experiences are, and have been, and make one or two comments concerning the basic principles of therapy.

The first basic principle that any clinician should follow with any drug is, "If I give this drug, will it alter the clinical course of the patient favorably?" It doesn't make any difference whether one is using aspirin or giving penicillin intramuscularly. Furthermore, we will all agree, the severity of the illness should be borne in mind in administering any drug. "Will the patient get well in the natural course of events?" We will all agree that severe infections of bacterial origin that are amenable to penicillin or antibiotic therapy should be treated. On the other hand, I am firmly convinced that *some* mild infections should be treated. Severe exudative pharyngitis due to beta hemolytic streptococcus, by all means, should be treated—and treated aggressively. Similarly, there is a place for definitive and aggressive therapy in the treatment of mild pharyngitis due to the beta hemolytic streptococcus; to prevent the suppurative complications primarily, but also to prevent the nonsuppurative complications of rheumatic fever and glomerular nephritis. The majority opinion today is that if we could eliminate the hemolytic streptococcus from the tissues very early in the course of streptococcal disease, rheumatic fever and the majority of cases of glomerular nephritis would decline precipitately.

We say that we should use a drug or an agent based upon the etiology. That is wise counsel. Many times the clinician isn't carrying out the bacteriological techniques. He must wait 24, 48, 72 hours before the bacteriological data are available before treating that patient, but in many instances, he must act before this, and act quickly, and that is where clinical experience comes in. There are some very disturbing things in treating diseases without precise bacteriological data that one sees in the out-patient, and in the inpatients of large general hospitals. For instance, everyone knows that the prompt use of penicillin for exudative hemolytic streptococcal pharyngitis results in the prompt amelioration of symptoms. On the other hand, the prompt use of penicillin for a diphtheritic membrane can be catastrophic. And we do see patients with diphtheria being treated with penicillin, and penicillin, as you well know, is not the drug of choice. Clinical experience is extremely important—just as important as precise bacteriological data, in prescribing antibiotics for patients.

Another thing that one considers of any drug, is the cost. Fortunately, the competition in the pharmaceutical industry is so great that the cost has come down within the reach of

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This paper was prepared from a talk presented before the American Academy of Ophthalmology and Otolaryngology, New York City, October 1954.

most people. And it really is outstanding how little it does cost to treat a patient with a formerly fatal disease.

But one must consider the side effects of those agents. And these side effects may be quite devastating—occurring only to a few patients—but when they do occur, the results may be tragic.

Just this last week I saw two reactions that were hair-raising. One occurred in a doctor's wife, who had a respiratory infection. She was given penicillin—she became more ill with a temperature of 105. A rash appeared from head to foot. She entered the hospital with a diagnosis of acute lupus erythematosus and she had the classical picture of acute lupus. She was desperately ill within twelve hours, and only the prompt use of hydrocortisone given intravenously brought about recovery. But more disturbing was what happened to the head of a department in a medical school —a distinguished individual who had tenosynovitis involving the thumb. He was given one injection of procaine penicillin, and twenty minutes later he came to my office (I didn't give it to him), in collapse, with a rising pulse rate, the blood pressure was dropping, he was cyanotic, and it was quite apparent that he had anaphylactic shock. Urticaria had already appeared on his buttocks. Within twenty-five minutes after the injection, very fortunately, he was in bed receiving hydrocortisone intravenously. I would like to say in passing here, since these happened just in the last seven days, that if one does run into a desperate situation, one should not try antihistaminics or epinephrine, but promptly administer cortical steroids, and we are using 100 mg. of hydrocortisone intravenously in 500 ml. of water and 5% glucose, given as a slow drip over a period of eight hours.

Clinicians, in discussing antibiotics, ask two primary questions, (1) what are the clinical indications, and (2) how does one give these drugs? I would like to discuss briefly some of the indications and some of the methods for using these drugs. First of all *tyrothricin,* since it was the first to be marketed. It is used by otolaryngologists and others. This drug is active only locally and only against Gram-positive cocci. It isn't absorbed very well. It has a very limited use.

Penicillin. Penicillin is really a remarkable drug. We have been using it since 1942—over twelve years now. This is the drug of choice for the majority of infectious diseases. During this time, we have only seen one species of bacteria pose a problem of resistance. I will discuss that a little later. We have recently analyzed our toxic side effects due to penicillin in a large series of cases and found that less than 2% of patients have side effects from the drug—so that therapy must be discontinued. In other words, 98% of patients that received this agent in a large general hospital had no side effects. But some of the toxic reactions were bad.

Penicillin is the antibiotic of choice in the following infections: First, for all infections due to group A hemolytic streptococcus, and for most infections due to alpha and gamma streptococci — which includes streptococcus viridans. It should be the drug of choice in the majority of cases of subacute bacterial endocarditis and urinary tract infections. It is indicated in all cases of pneumococcal infections including lobar pneumonia and meningitis. Gonorrhea, syphilis, and staphylococcal disease, (although, as you have just been told, the problem of resistance is a very serious one) respond to penicillin, as do actinomycosis and anthrax. I don't know of a single strain of group A hemolytic streptococcus that has become resistant to penicillin. I don't know of a single penicillin-resistant strain of the gonococcus, either in our clinic or any other clinic, including the U. S. Public Health Service. I don't know of a single strain of a pneumococcus that has become resistant, and when you consider the tremendous amounts of penicillin that have been used in the last ten or twelve years, and we still have this bacterial sensitivity, it is quite remarkable.

A large number of penicillin preparations are now available and the drugs may be given by several routes. For severe systemic disease in the hospital, I prefer to use aqueous crystalline G penicillin in divided intramuscular doses. Although for prophylactic

purposes, mild infections, and for streptococcal and gonococcal infections, one may use slow-absorbing penicillin—such as an agent like "Bicillin". Penicillin preparations are definitely valuable when given orally, and certainly in children one should use this route whenever possible. We don't employ continuous intravenous infusions of penicillin or continuous intramuscular infusions. I have never seen any untoward reactions from the intrathecal use of penicillin if one does not exceed 20,000 units a dose daily. Penicillin is used in combination with other agents and I will come to that shortly.

Streptomycin and dihydrostreptomycin have the same therapeutic properties. They differ in their toxic effect on the 8th nerve. Streptomycin causes vestibular dysfunction; dihydrostreptomycin causes hearing loss. These effects are related to dose. With but rare exceptions, it isn't necessary to use more than 2 gm. of either drug daily. Even under these circumstances I have seen patients develop vestibular damage due to streptomycin within eight days. It is generally agreed that for long-term therapy streptomycin is to be preferred, for short-term treatment we prefer dihydrostreptomycin—that is, the drug should not be used for longer than ten days. Some use combinations of each drug; that is stated to reduce the incidence of toxic effects of streptomycin or dihydrostreptomycin. Streptomycin, in combination with other drugs, is the drug of choice in tuberculosis, tularemia, for Gram-negative infections of the urinary tract, Hemophilus influenzae meningitis, brucellosis, and disease due to Klebsiella pneumoniae.

The so-called broad-spectrum antibiotics include chlortetracycline or aureomycin, oxytetracycline or terramycin, and tetracycline or achromycin and tetracyn. They have the same essential toxic side effects — mostly gastrointestinal. We believe that tetracycline definitely causes less gastrointestinal irritability, and this, again, is in relationship to dose. Many diseases, including lobar pneumonia, may be treated successfully by using no more than 1000 mg. a day. We treated a series of cases of lobar pneumonia with 800 mg. of aureomycin a day and it was just as effective as 2 gm. of the drug a day.

The fortunate feature about these drugs is that they can be given orally when the clinician is not so sure of his etiology, because they are effective against Gram-positive and Gram-negative organisms and against some viral diseases. I should like to emphasize the rising incidence of psittacosis in this country. This disease, an atypical pneumonia, is amenable to tetracycline in a dose of 300 to 500 mg. intravenously given every 8 to 12 hours, or 250 to 500 mg. given orally four times daily.

Chloramphenicol is another broad-spectrum antibiotic, but we do not believe that it is similar to tetracycline. It does not have the same antibacterial spectrum that tetracycline does. It is more limited. We use approximately twice as much chloramphenicol as we do tetracycline. In the treatment of typhoid fever —4 gm. is given as an initial dose, and then 1 gm. four times a day. Chloramphenicol is effective in infections due to Hemophilus influenzae. It is also valuable for staphylococcal disease in which the organisms are resistant to other agents.

I would like to point out that 50% of the strains of Proteus that we isolate from patients are sensitive to chloramphenicol or to penicillin. It is a very difficult organism to eradicate sometimes in chronic infections of the urinary tract. Chloramphenicol and penicillin have been used for that purpose.

Erythromycin has a narrow range of antibacterial activity. It is effective principally against Gram-positive organisms. It is the drug of choice against penicillin-resistant strains of staphylococcus, and in the treatment of diphtheria along with antitoxin. Experimentally, it is the best antibiotic for the protection of animals against lethal doses of diphtheria. It has been used prophylactically for diphtheria carriers in a dose of 2 gm. a day.

Bacitracin has been used successfully by us and others for the treatment of infections due to penicillin-resistant staphylococci. We have not seen any serious side effects from bacitracin in a dose of 80,000 to 100,000 units a day, given intramuscularly — that is, nephrotoxic effects. When that dose has been exceeded,

trouble may occur.

Polymyxin should be remembered as the drug of choice against Pseudomonas aeruginosa or pyocyaneus, given intramuscularly or intrathecally.

Neomycin is a drug that has both ototoxic and nephrotoxic effects. It should be rarely used parenterally. In one case recently we turned to neomycin. It was a case of bacterial endocarditis due to a resistant strain of staphylococcus. Complete hearing loss occurred in two weeks. But we were driven by a desperate situation, because the strain of staphylococcus in that patient's blood was resistant to every other antibiotic used over a course of ten months. Bacitracin is very valuable for local use. It is valuable for preoperative medication for elective colonic surgery—much more so than other drugs.

I would like now to say something about antibiotic combinations. The problem of antibiotic-resistance is a serious one and one does like to use antibiotic combinations to treat resistant infections. At the present time at the University Hospital, 60% of our strains of staphylococcus are resistant to penicillin and to streptomycin; 40% are resistant to aureomycin and to terramycin; and 30% to erythromycin. So, if a patient with a severe staphylococcal infection enters the hospital, he has not more than 50% of a chance of getting results from penicillin. Therefore, staphylococcal disease of any serious type should be treated with a combination. There is quite a bit of controversy as to whether antibiotics given in combination result in antagonism, that is, whether the antibacterial effect of one will reduce the effectiveness of the second. Experimentally, this has been demonstrated both in the test tube and in animals, but I have never seen any convincing instance where it was disadvantageous for the patient.

We are opposed to shotgun therapy, as many others are, but under certain circumstances, one must use combinations. For instance, in the rupture of a hollow viscus, such as an appendix, or when a peptic ulcer erodes through. One not only wants to localize the infection, but to prevent invasion of the blood stream. Under these circumstances, we use penicillin parenterally; streptomycin, and tetracycline or aureomycin are given intravenously—for only a short period of time until we know where we are and what the patient is doing. I am convinced that under such circumstances, combinations are advantageous. Combinations should be used for every case of pneumococcal meningitis. Pneumococcal meningitis in our hospital services, approximately 3000 beds in the University Hospitals, Minneapolis General Hospital and the Minneapolis Veterans Hospital, carries a mortality rote of 50%, in spite of all our drugs and what we can do. Sulfadiazine should be given along with penicillin because it gets past the blood-brain barrier and prevents the laying down of fibrin in the subarachnoid space. The walling off of pneumococci may be prevented in this manner.

In severe staphylococcal disease we start out with a combination of penicillin and bacitracin while waiting for the results of *in vitro* sensitivity tests, provided the patient's kidney function is reasonably good. If poor renal function is present, we give penicillin and erythromycin. We also use bacitracin and chloramphenicol. Chloramphenicol has not been widely used because of the fear of aplastic anemia in our community and, therefore, the incidence of chloramphenicol-resistant staphylococci is low. It is fortunate that this is true for these highly resistant strains because we have another antibiotic to which we can turn.

A combination of drugs should certainly be used in tuberculosis. Streptomycin and sulfadiazine, or chloramphenicol is used for influenzae meningitis. A combination of dihydrostreptomycin and a tetracycline drug is used for brucellosis. Severe infections due to Proteus call for penicillin and chloramphenicol. So we do see that there are definite clinical indications for combinations, not only to prevent the evolution of resistance, but also for therapeutic purposes.

In conclusion, I would like to make one further statement concerning recent observations. The purpose of antibiotic therapy is to destroy an invading organism so that inflammation, toxemia and death are prevented. One

of the most remarkable developments to me in medicine today, after studying infectious diseases for twenty years, is the effectiveness of hormones in allaying inflammation. I would suggest, that it would be interesting to get a group together who knows something about the subject in order to discuss the place of the cortical steroids, and possibly other hormones, in inflammatory reactions due to infectious agents.

SOME NOTES ON ATOMIC MEDICINE

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When we go back to the earliest days of history we find that when man first developed wit enough to analyze and speculate about the amazing and difficult world he lived in, many fantastic ideas were entertained by way of explanation. However, nothing dreamed of in the old days (except perhaps in mythology) has turned out to be more fantastic than what we now, though none too certainly, deem the nature of matter, space and time. Truly it seems all creation is such stuff as dreams are made of—perhaps dreams in the mind of the great master mathematician. At any rate, the old alchemists' dreams have been in part realized, though value relates to energy and radiations rather than to converting dross to precious metals. A magic key, the study of ionizing radiations, has unlocked both a Pandora's chest of horrors and the door leading to manifold benefits and glittering promise for the future.

Toward the end of the last century the study of electric discharges in evacuated tubes was avidly pursued by physicists, and in 1895 Wilhelm Konrad Roentgen in the course of such studies made the discovery of x-ray. He had noticed fluorescence under conditions where light could not be responsible and realizing there was a mystery calling for investigation promptly, systematically and energetically went to work on the problem—and with success.

A little later came the discovery by Becquerel of natural radio-activity; then the discovery and isolation of Radium and Polonium by the Curies.

Activity in such fields of research became prodigious and the story of it is fascinating. I always find myself tempted to talk too much about it. I'm afraid I'm something of a misplaced physicist. Time, however, forbids any detailed account and so we must content ourselves with the bare statement that we have at length found how to break up heavy atoms and how to fuse certain light atoms. In this process we have developed fission bombs and fusion bombs of frightful energy; also nuclear reactors of many sorts for the production both of power and of radioactive elements.

As we consider our medical interests in the modern world of atomics we find three major fields:

1. Responsibilities in atomic warfare.
2. Diagnosis, therapy and research at the clinical and other working levels.
3. Basic biological effects.

The first of these is, as it should be, a very familiar subject to physicians. However, in spite of praiseworthy efforts, there is still much room for improvement; and we will do well to remember that preparedness for war with nuclear weapons will pay peace-time dividends. In recent years emergency situations involving heavy casualties have not been exactly infrequent. These have shown us that there is need on the part of many of us for better knowledge of traumatic surgery under disaster condition; also a need for better organization. Confusion, desperation and panic reactions are ever imminent to aggravate and complicate unexpected disaster when too much depends on spur-of-the-moment decisions and improvisations.

Radiological Hazards

In the field of atomic defense, the hazards of radiation have at times taken too much of

the limelight. For that reason they have often been played down, for we don't want people thinking in terms of Geiger counters when they should be planning for rescue, first aid, and the care of burns and the usual traumatic injuries. There are, nonetheless, potent radiological hazards to be kept in mind and we will do well to avoid oscillating between extremes of disregard and overconcern. Some points to bear in mind are:

Atomic bomb fatalities from radiation are commonly estimated at 15% of the total. This is far from negligible.

Possible fall-out of radioactive debris and fission products must be taken into account.

Medical care of severe radiation illness is very exacting, difficult and burdensome.

Radiation is likely to prove a serious complication in many cases of burns and other trauma.

Adverse morale factors are notable.

Where an underwater burst is possible, very serious radiation hazards must be expected to widespread gross contamination.

Radiological warfare must still be kept in mind. Although it, too, has been mentioned from time to time in overly lurid terms, it should not be dismissed entirely. It has possible roles and could prove a considerable nuisance. Good indoctrination and training are important to prevent panic and minimize harassing effects. Actual casualty production should be largely preventable.

Related to the whole matter, of course, are the quantitative factors, and unfortunately there is a source of alarm and confusion in the permissible dosage standard of 0.3 r/week. Misapplication and misunderstanding of this standard can lead people to become alarmed at the idea of ever exceeding that amount. As a matter of fact that figure is for the protection of workers subjected to a life-time of radiation hazards in their daily work. It has no serious direct application otherwise, and the 0.3 r amount is constantly exceeded in the exposures of clinical radiology. Similarly we need to apply practical standards in regard to exposures resulting from warfare or other occasional necessity, at the same time realizing that all unnecessary exposure should be avoided and all necessary exposure minimized. This is worth considerable thought and effort. The figures applicable thereto are often mentioned as calculated risk tables since they might apply to various emergency needs and military operation. They are about as follows (for high energy x-ray and γ):

5r Negligible

25r No symptoms or detectable effects likely.

100r This is usually considered being near the limit for retention of effectiveness, i.e., ability to work and fight. There would probably be instances of mild nausea and perhaps vomiting and lassitude. Probable morale factors.

200r Severe radiation illnesses likely and casualties would occur within a few hours. Many of these following an initial phase of nausea show an interval of well-being with illness recurring in the second or third week. Proper provision for follow-up care needed.

400r In the 400-500 zone there would probably be a 50% mortality.

600r Few recoveries.

An important thing to remember is that people who have received a heavy dose of radiation, say 200r or more, are adversely affected by exposure and fatigue. Other illnesses and injuries would be adversely affected; surgery would involve increased risk.

With this brief mention of a few high lights, time bids us "March On" from this field to the next category.

Radiation at the Clinical Levels

Coming now to modern clinical possibilities in the field of atomic medicine, we have virtually an embarrassment of riches—so much so that it is well to keep in mind a main clarifying principle: viz, we are attempting to place the radiation precisely where it is needed and as far as possible (since radiation has certain injurious effects), limit it to that area. This is, of course, simple in essence but complex in practice; also very imperfect in accomplishment. So we keep trying new methods, materials and apparatus. Another and more modern factor relates to diagnostic work with tracers—here we wish not only to

place our radioactivity where we need it, but also have it of a type that will readily penetrate outward, to be recorded.

Accordingly choices relate naturally to energy, penetration and range of rays and particles, ionizing power and, in the case of many isotopes, the metabolic features of the element and the compounds it forms part of.

The x-ray as we all know, now provides an extremely wide range of energies from about 10 KV up to about 70 MEV. However, the conventional units in general use are largely in two categories, 80 - 140 KV for superficial and intermediate therapy, and 200 - 250 KV for so-called deep therapy. We can do excellent work with these.

The question, therefore, naturally arises: Is there any real benefit in employing the extremely energetic radiations or are we just going in for unnecessary super-duper gadgetry? I think the answer must be that there are definite gains even though at the same time, extremely sensational clinical results are not seen or expected, comparable for instance to those from some of our "wonder drugs."

The benefits of super voltage radiation relate to penetration factors. With our conventional x-ray even up to 250 KV the maximum dosage is in the skin and only about 1/3 of it reaches the 10 cm. depth or mid zone of the body. Skin damage has been a serious limiting factor. At the million volt level about half of the radiation reaches the deep structures.

At about 25 MEV the level of densest ionization and accordingly maximum effectiveness from x-ray goes beyond 3 cm in tissue; at 50 mev, reaches 7.5 cm, and at 100, 11.0.

Clinical trials are promising and it appears that the patients tolerate the therapy better even though the deep areas are receiving more x-ray. There is less lateral scattering, and a greater exit dose whereby the total x-ray absorbed by the body is considerably less. All these considerations are important in and of themselves. However, we still must consider normal tissues, particularly of the gastro-intestinal and genito-urinary systems. In fact we have to consider them more than ever since we can cause irreparable damage to deep structures before the skin calls for limitation.

Thus we still fall short of being able to give cancericidal doses to all deep tumors as desired or without danger of eventual recourse to such radical surgery as complete pelvic exenteration.

Related to supervoltage x-ray from betatrons we have use of the electron beam itself. This has certain advantages for superficial and intermediate levels. By adjustment of voltage we can effect a high concentration of ionization at these levels, with a very rapid falling off beyond—much more than occurs in the attenuation of x-ray. However, at the energy levels necessary for deep lesions the rate of decrease is more gradual and the benefit is lost.

Many isotopes have proven useful. Some of the more important are:

P32—used largely in leukemias, polycythemias and in tracer research.

I131—very useful in hyperthyroidism and certain types of thyroid cancer; also used in diagnosis and study of thyroid function.

Sr90—used in plaques for certain skin lesions.

Co60—used in various ways in the general manner of radium: It is also being used successfully to energize teletherapy generators (One now in very successful operation in the Radiological Department of the University of Tennessee College of Medicine)

Cs137—is being studied for the same purpose.

Au198—used to infiltrate certain tumors and to control malignant effusions.

Na24—used to study circulation.

Fe59—and also Cr51—are used to tag R.B.C.

S35—used for tracer study.

Br82—in solution for bladder carcinoma (England).

Tracer Research

In the matter of tracer research truly an enormous volume of work is being done in all fields, not only of medicine but in agriculture and industry. In general every phase of metabolism is being traced and we are gradually gaining much better insight into physiological and pathological processes; and it is noted already that turnover of various mate-

rials in the body is greater than previously thought and that chemical bonds ordinarily thought of as firm and closed are open in the body.

Considerable ingenuity and skill are needed for tracer studies—likewise good cooperation of physicist and biochemist. It should be noted also that there are handicaps and limitations. Oxygen, nitrogen, chlorine and magnesium lack isotopes with convenient half life; likewise carbon. C11 is very short lived; C14, very long. C14 is also a soft β emitter and so its radiation is subject to considerable absorption. The immensely useful P32 likewise is handicapped for tracer work by having no γ radiation; S35 and Fe55 are also in the same category.

In general great progress is being made and it is not too much to hope that one day we may unravel many metabolic problems including the secrets of neoplastic growth. Thereby we may gain a new vantage point for further attack on this frightful scourge.

Basic Phenomena

As we come finally to fundamental studies of the biological effects of ionizing radiation, we find a fascinating field in which we are gradually achieving a much better understanding.

Just how the ionizing radiations produce their effects on living tissue has been a dark, mysterious affair. Until recent years most of our knowledge and most of our preoccupation too, has been related to histopathological changes. Now, however, some light is being shed on the reasons behind the changes we see under the microscope and in the clinical course of radiation effects.

The fundamental, though not exclusive, basis for biological action is, of course, ionization. High energy photons such as comprise certain gamma rays and therapeutic x-rays, act as miniature bullets which dislodge orbital electrons leaving the atom with a positive charge and thus forming an ion pair comprised of the electron and the atom it was forced from. The electron is set in motion—often a rapid one—and in turn dislodges other electrons to form still more ion pairs. If an electron itself is the initial primary ionizing particle (as in the case of the β ray), it serves in the same way. So do protons and alpha particles. Indirectly the neutrons also cause ionization. The net result, in any event, is a flux of dislodged electrons and a residue of charged atoms. Difference in the effects of the various radiations are related to the distribution and density of ionization.

The biological importance of all this is that the atoms affected by ionization are prone to produce chemical changes. In addition whenever a binding electron is dislodged, there will be disruption of the molecule concerned. In the case of solutions, both the solvent and the solute are involved and often the effects on the former will be more important. We find as a result of this ionization a number of hydrogen and oxygen atoms and also OH groups are derived from water. These are very active chemically and in addition traces of hydrogen peroxide and possibly organic peroxides appear. Aside from effects on water and its dissolved gases, there will also be direct effects on electrolytes, such as the halides. All the various components of living tissue may be directly affected in greater or lesser measure on a statistical probability basis related to the amount of radiation and molecular size. Then, too, we must remember that aside from ionization there is some degree of excitation whereby atoms are raised to a higher energy state than normal without loss of electrons. This, too, will encourage chemical changes and tissue reactions. All this interferes with the normal metabolic processes by producing changes which may be minor and in some measure reversible in the case of small doses, but major and irreversible with sufficiently large doses. Changes that take place are about as follows: proteins are denatured; enzymes are inactivated; cell respiratory exchange depressed; mitosis diminished, disordered or interrupted; the catalytic activity of genes depressed or stopped. Some genes are destroyed as functioning agents and in general there is an increase in genetic mutations of all types.

This matter of genetic mutations from radiation has been and still is the subject of innumerable studies and we are yet far from the precision we would like for the human species.

Quantitative results as applied to the human species involve many extrapolations and estimates show extreme variations. However, since most mutations are harmful, unnecessary exposure is certainly something to be avoided especially when of possible genetic consequence.

The effects of noxious agents tend to be greatest and of most importance where there is active biochemical commotion involving compounds of labile nature. It is thus understandable that there is a disproportionate effect on actively growing or multiplying cells or tissues, such as blood forming cells, gonads, germinal layer of skin and mucous membranes. The same factor applies also in gestation, particularly in the early months.

Secondarily there are toxic effects probably related to denatured proteins, aberrant functioning, and products of injured or dead cells. There are also reactions, resembling the effects of histamine and forming the basis for a very plausible hypothesis that the formation of histamine-like substances comprises another basic phase of radiation damage. Finally, there are the manifold complications resulting from pancytopenia. These are usually the cause of fatal outcome in radiation illness.

The various toxic phenomena naturally bring up the matter of therapy and possibility of antidotes.

In the nature of things ionization itself cannot be prevented; nor can the immediate effects of the toxic substances be neutralized with sufficient promptness after the event of exposure. Suppose, however, we anticipate the impact of heavy dosage of ionizing radiations by administering certain substances. The picture then is altered since there may now be diffused throughout the tissues, compounds which can compete with the vital living structures for combination with toxic agents concerned. Thus we find that if there is a liberal amount of sulfhydryl-containing agents, such as cysteine or glutathione, that lethal effects are reduced roughly by a third. Again cortical adrenal extracts and desoxycorticosterone have shown beneficial effects. Clinical application of such agents is still somewhat conjectural and the matter for further research.

A very encouraging feature of radiation pathology is that certain primordeal cells are resistant, possibly because their activity is not consistently at high pitch. However, that may be, the fact remains that the so-called stem cells found in gonads and in blood forming tissues are resistant. Thus, if we can tide victims over the crisis of pancytopenia with its attendant anemia, hemorrhage and loss of resistance to infection, these cells will make possible a "come back". Good nursing care and appropriate use of transfusions and antibiotics can tide many desperate cases over the emergency phase whereupon they will have a good chance of regaining virtually normal health. This is indicated, too, by the present good health of many former Japanese radiation casualties.

On this more cheerful note I would like now to close and take advantage of the opportunity to mention that the Navy has been very active in the field of radiation research, particularly as related to the effects of nuclear weapons. I do this not only as a matter of Service pride but to point out that our medical service does offer its physicians and scientists opportunities for fascinating and important work. The Navy still has something to offer career-wise, in return for the occasional hardships—which after all may prove more salutory for us than we think.

CARCINOMA OF THE ILEUM WITH ILEO-CECAL INTUSSUSCEPTION

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Orangeburg, S. C.

A CASE REPORT

Although malignant lesions of the small intestine have been reported with greater frequency in the literature in recent years, they are, nonetheless, rather uncommon. Peterson states in 1950 that approximately 400 cases of primary carcinomas of the small intestine had been reported.[1] Mayo reported in 1951 that 1% of gastrointestinal carcinomas were seen in the small intestine.[2] Hoffman and Pack state that 46% of carcinomas of the small intestine are in the duodenum.[3]

Malignant lesions of the small intestine found at surgery have usually manifested themselves by pain, bleeding, and primary obstruction, singularly or in combination. In the later stages anemia, weight loss, and nausea and vomiting develop.

Carcinoma of the small intestine associated with ileo-cecal intussusception is believed to be such an interesting condition that the authors feel that the following case is worthy of report not only because of its rarity but also because of certain frustrating issues that developed in the course of treatment. Brayton and Norris, after extensive review of the literature up to 1954, were able to find 57 cases of intussusception with an associated malignant lesion of the small intestine, however, this figure was not broken down into sarcomata, carcinomata, or carcinoids.[4]

CASE REPORT

H. W., 60 year old Negro male, was admitted to the Orangeburg Regional Hospital on January 14, 1954, with the chief complaint of severe pain about the abdomen. He stated that 10 hours prior to admission he was seized with a sudden severe excruiating pain about his mid-abdomen immediately followed by vomiting. This pain had been continuous, at times colicky, and radiated toward the right flank. He had several diarrheal bowel movements, one of which contained dark blood. Since the onset of the pain he had vomited four or five times. After the onset of pain he noted a mass gradually increasing in size about the right side of the abdomen.

Physical examination revealed the skin to be warm and dry. Rales were heard over the bases of the lungs. The heart was found to be fibrillating and there was a grade 2 systolic murmur heard at the apex. The blood pressure ranged from 250-270/120-140. There was a large, somewhat tender mass approximately 8 to 10 cm. in diameter about the middle of the right side of the abdomen. There was slight to moderate abdominal distention and percussion elicited a tympanitic note. The peristaltic sounds were of a high pitch with frequent rushes.

Urinalysis showed albumin 3 plus and 10-12 RBC to the HPF. The total WBC was 12,300 with 90% polys and 10% lymphs, and the hemoglobin was 12.5 grams. A scout film of the abdomen showed dilated loops of small intestine. A chest film showed moderate left sided enlargement of the heart and mild emphysema of the lungs.

Because of the sudden onset of pain, with a mass rapidly increasing in size located in the right side of the mid-abdomen, accompanied by intestinal obstruction and blood in the stools, it was felt that the most likely pathology present was an intussusception, probably an ileo-cecal type. Because of cardiac decompensation, fibrillation, dehydration, and a hypertensive state, it was decided after medical consultation to rapidly digitalize the patient with digitoxin (crystodigin) and await developments in view of his poor physical status. Parenteral fluids with electrolytes and Wangensteen suction were started. Antibiotics were also administered.

Twelve hours after admission the heart sounds had become regular except for an occasional premature systole but the abdomen had become more distended despite intragastric suction. The NPN was elevated to 48.5 mg. per 100 ml. An ECG was done and it revealed a rate of 130 per minute, an occasional premature auricular systole, and evidence of left heart strain and coronary heart disease.

Since intragastric suction did not give proper decompression of the small intestine, a Cantor tube was passed through the stomach into the small intestine with the aid of fluoroscopy. This helped to decompress the abdomen over the next 24 hours. A barium enema was given, x-rays were done, and it was the impression of the radiologist that the patient had an intussusception with a "coiled spring" pattern.

The condition of the patient seemed to be improved and he was scheduled for surgery the following morning pending NPN determination, however, during the night he became delirious and pulled his Cantor tube out. Attempts to replace it were unsuccessful as he was not cooperative.

On the third day following admission his NPN was 115.5 mg. The patient's condition had become critical. He appeared somnolent and developed hiccups. Medication was continued along with parenteral fluids with electrolytes. Intragastric suction seemed to prevent further distention. Peristaltic sounds were at times absent and at times minimal. Pain about the abdomen had subsided somewhat.

On the sixth day following admission his NPN was 150 mg. On the eighth day following admission we were amazed to see that he had improved somewhat

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generally. His hiccups suddenly disappeared, he seemed to be less somnolent and his NPN was 120 mg.

A decision was made to explore his abdomen on January 22, 1954. He was taken to the operating room. No preoperative medication was given. The anesthesiologist blocked the right intercostal nerves from T-6 through T-12 with 1% novocaine. The area of the celiac ganglion was pooled with 25 ml. of 1% novocaine through a paravertebral approach. Then a long mid-right transrectus incision was made, after supplementing the field block with local infiltration of 1% novocaine (including the parietal peritoneum). The relaxation was wonderful and the patient did not once complain of discomfort. Upon opening the abdomen an ileocecal intussusception was found with an irreducible intussusceptum. The distal end of the intussusception had extended almost to the hepatic flexure. This was milked retrograde as much as possible in order to preserve as much of the right portion of the colon as possible. The peritoneum lateral to the cecum was incised and reflected medially. At this stage another 10 ml. of 1% novocaine was pooled into the root of the mesentery. The right segment of the colon was divided between clamps near the junction of the cecum with the ascending colon, after the intussusceptum had been milked back as far as possible into the cecal portion of the intussuscipiens. Then the ileum was divided between clamps approximately 9 cm. proximal to the site of intussusception. The resected gut along with a "V" portion of mesentry was removed. A primary anastomosis was done using two rows of continuous chromic catgut #00. The abdominal wall was then closed and patient returned to his bed. The operative procedure lasted approximately one hour and thirty minutes.

The gross pathological report was "a portion of cecum with appendix attached. Extending into the ileo-cecal opening is a 28 cm. segment of gangrenous ileum. Protruding from the ileo-cecal opening externally is a 9 cm. segment of ileum. Upon opening the ileum and reducing the intussusception, mucosal thickening is identified within the inner loop 7 cm. distal to the ileo-cecal constriction. Gross evaluation of this area is made extremely difficult by the general gangrenous changes." The microscopic sections showed "marked necrotic changes in some areas. One well-preserved section reveals a partially polypoid structure showing malignant epithelial changes and overlying several invasive plugs which extend beneath the muscularis mucosae but not into the true muscular wall. One of these plugs is dilated to the form of a small cyst by mucoid material." The final pathological diagnosis was "carcinoma of ileum with intussusception and gangrene."

The patient was continued on digitoxin, intragastric suction, parenteral fluids, antibiotics, and vitamins. The intragastric suction tube was removed after 72 hours. Four days postoperatively his NPN had declined to 98.5 mg. On the sixth postoperative day he was eating a semi-soft diet and on the seventh postoperative day a soft diet. The incision was noted to be healing by first intention and his sutures were removed on the tenth postoperative day. He was discharged from the hospital on the fourteenth postoperative day.

Patient's NPN was checked after about one month after discharge and found to be normal. He was continued on digitalis. He was followed periodically in the cancer clinic and was last seen on February 14, 1955. At that time, a little over one year after surgery, he was found to be having normal bowel movements and was free of abdominal pain.

DISCUSSION

Immediate surgery would have been the treatment of choice had the patient's condition permitted, but it was felt that if his cardiac condition and his fluid balance could be corrected he would have been a better risk. However, gangrenous changes in the bowel produced an early toxemic state with renal involvement.

The intussusception with nearly fatal result led to surgical intervention with removal of an early unsuspected carcinoma and good hopes of a cure. In cases of intussusception in an adult, either of small or large intestine, a neoplasm should be suspected because it is often the etiological factor in producing an intussusception.

As far as the method of resection of an irreducible intussusception is concerned this would apparently depend on the length of the involved segment. Nygaard reports a case of ileo-colic intussusception in which the intussusceptum was of gigantic proportions, necessitating an intracolonic resection of the gangrenous segment followed by a side to side anastomosis of the ileum to the transverse colon.[5] Barnes reports a case of irreducible intussusception in an infant with intracecal resection through an opening in the cecum, in which the parietal peritoneum was previously sutured to the cecal wall; he then passed a catheter through the new ileo-cecal junction and brought out the catheter as a cecostomy.[6] It is felt that each case should be individualized and that the procedure should be one that preserves as much normal gut as possible, is not too time-consuming, and has less chance for peritoneal soiling.

In the authors' case it will be noted that the patient started improving on the seventh day following admission. It is probable that the strangulated site had started demarcating the gangrenous from the viable tissue and had blocked off absorption of toxins. It is also possible, if not probable, that if this patient could have been maintained in proper fluid and electrolyte balance with maintenance of intestinal decompression and general supportive care, the gangrenous bowel would have finally detached itself by vigorous peristalsis and

would have been expelled from the bowel. Jacobson et al report a case of extrusion of a sequestrated intussusceptum following a colocolic intussusception, with survival.[7] Torpea et al report a case of their own of intussusception of the ileum followed by expulsion per anum with survival, and in addition quote from the literature several other cases.[8]

SUMMARY

A case of carcinoma of the ileum with ileocecal intussusception is presented. Primary resection was performed after being necessarily delayed until the eighth day after onset because of complicating factors.

ACKNOWLEDGEMENT

The authors wish to express appreciation for the excellent anesthetic management given by Dr. G. Preston Cone, Department of Anesthesiology.

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SOUTHERN PEDIATRIC SEMINAR

Pediatrics, Internal Medicine, Obstetrics, and Gynecology will feature the 35th annual session of the Southern Pediatric Seminar, Saluda, North Carolina. The course will be divided into three one-week sessions and those who wish to attend may come for one, two or three weeks. The first week (July 11-16) and the second week (July 18-23) will be devoted to pediatrics and internal medicine. The third week (July 25-30) will be given over to obstetrics and gynecology.

The faculty of the Seminar consists of men from all over the South who are leaders in their respective fields. About half of them are members of medical school faculties and the other half are men in private practice. In this way there is a well balanced program of the theoretical, the scientific, and the practical.

The Seminar is for the general practitioner, and is fully accredited by the American Academy of General Practice for post-graduate instruction. Those desiring further information should write to Dr. D. L. Smith, Registrar, 187 Oakland Ave., Spartanburg, South Carolina.

TRYPSIN, AN ADJUNCT IN TREATING PERTUSSIS

A REPORT OF TWO CASES

MAX A. CULP, M. D.
Fort Mill, S. C.

This is a report of the benefit derived from the use of trypsin (Parenzyme, National Drug Co.) in treating two cases of pertussis in non-immunized children.

The first case was one in a four year old white female, of three weeks duration, with severe and frequent paroxysms which were only slightly productive and accompanied by vomiting and cyanosis. Fever had ranged from 100 to 101 degrees with little or no response to oral tetracycline. The second case was that of a three year old white female, of ten days duration, which was much less severe, but whose pertussis was progressing under oral tetracycline.

Each patient was given daily injections of 0.3 ml. of Parenzyme with just enough Hydrocortone to fill the needle, for four days. The younger child was afebrile and had a chest clear to percussion, with only a few rales, and with mild temperature elevation. The older child had a few more rales, but her chest was also clear to percussion.

During the above treatment oral tetracycline was continued at the original dosage. Parenzyme was then tapered off in two doses, given every second day. The chests of both patients were clear at this time although there was an occasional non-productive cough.

As there was no relapse after five days both cases were discharged. Both had been treated in the office.

DISCUSSION

Diagnosis was made from the history and physical examination during an epidemic of pertussis in the community.

Oral tetracycline had failed to alter the progress of the pertussis in spite of one week of continuous therapy.

Hydrocortone, one needle full, was used solely to lessen the pain from the injection of parenzyme; without Hydrocortone there is much pain and slight swelling around the injection site for several days. Much of this discomfort is relieved by one needle full of Hydrocortone with each injection.

Trypsin, (Parenzyme, National Drug Co.) by its proteolytic action aids in the control of inflammation and edema of the affected tissues. The dose is varied according to the size of the patient and the severity of the case. It must not be stopped suddenly but should be gradually decreased or a small maintenance dose given for a short period.

CONCLUSION

Trypsin (Parenzyme) was found very beneficial in two cases of pertussis. The cost is much less than that of some of the serums used.

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Editorials

THE HOOVER COMMISSION

For the recommendations of this commission there is much to be said except for one of the twenty nine proposals. Many sound suggestions are made for avoidance of duplication and overlapping and for the coordination of several similar services which are now relatively unrelated.

Recommendation for tightening the requirements for veteran's medical care are offered, but in the next breath the Commission proposes an extensive and costly program of outpatient service for veterans which would not only nullify any savings from the first suggestion but also would extend unreasonably the range of care outside of hospitals.

If the report of the Commission is to be made acceptable as a whole to the medical profession, some drastic change in the undesirable proposal would be most desirable.

THE ARMED FORCES MEDICAL LIBRARY

One of the suggestions of the Hoover Commission is that the Armed Forces Medical Library in Washington be made a "National Library of Medicine". Today this is the largest and most important medical library in the world, and it affects the future of medical research most intimately. It is poorly housed and poorly supported. Adequate housing and ample budget are recommended strongly, along with certain administrative changes, as follows—

"That legislation be enacted to establish a National Library of Medicine as a Division of the Smithsonian Institution, with a board of trustees to be selected by the Board of Regents of the Smithsonian Institution; and that the board of trustees be responsible for directing the policy of the National Library of Medicine. The medical collections, staff and activities of the Armed Forces Medical Library should be transferred to these trustees. Housing and a budget adequate for the National Library of Medicine should be provided."

TONSILS

Unjustified tonsillectomy is one of the editor's pet subjects for indignation, although the passing years and constant objection by many authorities have brought about a pleasing reduction in the indiscriminate performance of the operation. It has its place, but one far back from the front, and there, it is to be hoped, it will remain.

A new phase of the matter has been recently expounded in a lead article in the JAMA*. From a group of patients who had had tonsillectomy (for reasons not specified) blood cultures were found to be positive in 28.3% after operation. From another group who had had penicillin intramuscularly before operation, blood cultures were positive in only 5.8%. The conclusion is that all patients having tonsillectomy should have daily injections of penicillin for 4 to 10 days before operation in order to prevent bacteremia.

This rather awesome recommendation leads to rumination over a few questions. 1. How often is bacteremia a clinical problem after tonsillectomy in the many thousands of healthy patients who have the operation? 2. How often is penicillin sensitivity likely to become a problem? 3. What effect on the psyche as well as the gluteus maximus of the young patient does this merciless series of injections have? The answers would seem clear enough.

The simplest way to avoid these difficulties is to avoid operation as much as possible. To add the man-made difficulties to the problem of tonsillectomy seems much like complicating the unnecessary.

*JAMA: *157*; 877-881. Mar. 12, 1955

TWO PROPOSALS

The report of the South Carolina Hospital Care Study Committee contains a great deal of sound comment and suggestion. While

copies have been mailed to the physicians of the state, it may be that many have not been read. Therefore, with an exhortation to our readers to read the report in full, we venture to emphasize certain points by lifting excerpts from the letter of transmittal.

"The Committee has assembled important data relating to the cost of hospitalization in South Carolina and to the cost of hospital care for the indigent—and our definition of indigent embraces not only the categorically indigent, those who are on welfare rolls, but also the medically indigent, those who can pay the expenses of normal medical care but who find their resources destroyed and their capacity to pay undermined by some long chronic illness, requiring expensive treatment.

"There still remains the problem of financing the hospital care of those unable to pay for it out of their own resources or out of insurance which they have purchased for this purpose. And South Carolina's hospitals, public and private, will never get on a sound basis until some solution is found for this problem, nor can the state feel that it has begun to meet its obligations to its less fortunate citizens until a state-wide plan, intelligently attacking the problem, has been put into effect.

"Nor is the Committee persuaded that it has arrived at any perfect solution. Out of this study, however, have come two recommendations which, if adopted, would put South Carolina in the forefront of those states in the South which have been struggling with the problem of financing the hospital care of the indigent and medically indigent.

One proposal, which the Committee anticipates could be implemented almost immediately, is a program for the hospital care of the categorically indigent which could be financed on a matching basis by the state and federal governments.

The other is a program for the hospital care of the medically indigent which would require an initial annual state appropriation of $1,000,000 to be matched by county contributions in a like amount—a proposal which would equate county contributions with need and use.

Both of these proposals require the appropriation of public monies to meet these needs. But it is at once more logical and juster that the burden of the hospital care of those unable to pay should fall upon all citizens in proportion to their capacity to pay than that it should be imposed upon those already hard-pressed to meet their own medical and hospital expenses.

As to the other facet of the problem—medical care for the indigent—the Committee recommends that there be no appropriation. The members of the medical profession in South Carolina prefer that their services be contributed, without cost, to those unable to pay. With his decision no layman may cavil."

THE SOUTH CAROLINA ACADEMY OF GENERAL PRACTICE

JACK OF ALL TRADES

The home owner who is not his own handy man frequently finds himself in a quandry. Who shall he call to repair the metal clasp on a casement window? Or is it really worthwhile to call the plasterer for a crack in the cement aong the door jamb of the garage? Our industrial life has become highly specialized. The union carpenter is usually not the craftsman the guild master of old was reported to be. Except when sitting in his own hammock on a Sunday afternoon whittling away with his knife I doubt whether he has any idea of how long to gouge out a chunk the size of a quarter let alone an intricate design. Yet his products are cheap and serviceable and in one day he earns more real money than many an ancient craftsman earned in a month. He is not jealous of the plumber or the plasterer and his inability to carve a coat of arms on the ceiling beam bothers him not at all. In his $22 a day affluence he smiles condescendingly on his rare handyman acquaintance who can put a dowel in a chair, a tile on the wall, a hinge on the door; who can paint a panel and put down a concrete walk at perhaps $1.50 an hour.

Why then are we surprised when in the field of medicine the plastic surgeon gets $125 to remove a sebaceous cyst on the face, the neurosurgeon gets $500 for trephining, the urologist a similar amount for "punch operation" and the general practitioner $25 for caring for a pneumonia? The "chest man" who actually confirmed the diagnosis only got $50.

"I wonder what's happened to the general practi-

tioner," says the patient as he runs off to see the specialist,—So wrote Dr. Peabody of Harvard over 25 years ago. Let us examine what has happened to him.

There is little doubt that in medicine itself the specialist looks down on his general practice colleagues, and it surely is easy to see why this is so. In his capacity as a specialist the qualified dermatologist should know what the rash is when the general practitioner doesn't, the neurologist should know whether the sclerosis is multiple or amyotrophic and lateral. Over a period of years, therefore, the specialist comes to the conclusion that his general practice colleague just isn't very bright, and if that is his real feeling, it must of necessity show at times in his relationships with patients. It isn't human for the dermatologist to remind himself that he doesn't know a thing about abruptio placenta or glomerulonephritis, or for the neurologist to remember that pityriasis rosea and roseola infantum are more than just names to the general practitioner. If they should remember that the general practitioner is a jack of all trades, the main impression of most is that he is master of none. When called upon to help the psychotic, the psychiatrist rarely realizes the tremendous number of psychoneurotics helped by the general practitioner; the dermatologist probably doesn't know how many impetigos and dermatitis venenata he doesn't have to see (although I am sure he will realize how many luetics he doesn't see).

If the specialist, then on many occasions has reason to point up one general practitioner's limitations and if it shows frequently in his patient relationships, how much more often does it show up in his professional relationships? Isn't it then only a step to hospital relationships and isn't this a factor in perpetuating the difficulties general practitioners have with hospital staff appointments?

It was Anthony who said, "The evil that men do lives after them; the good is oft interred with their bones". So let it not be with the general practitioner! The multitude of ills and complaints he more than adequately treats should not be forgotten because on rare occasions he is inadequate. I stress the word rare because I believe that any fair minded man must admit that even the poorest doctors do far more good than harm; that mistakes of omission and commission are not made solely in the province of general practice.

Since "master, of none" is applicable to the specialist as well as the general practitioner let us now examine whether the jack of all trades has any function.

Just as hiring a plumber, a carpenter, a tile man, etc., is economically ruinous to the householder for routine jobs, so it should be obvious that their medical counterparts are equally ruinous economically to the small homeowner! If the surgeon opens all paronychias, if the obstetrician brings all the babies, if the psychiatrist sees all the problems, if the E.N.T. man sees all the colds, the cardiologists all the murmurs, and the gastroenterologists all the tummy aches, we are going to run into trouble economically—or perhaps we already have.

Many people foresee internists taking over the province of general practice. Aside from the fact that he doesn't wish to (hasn't he become an internist?) there is the matter of night calls and the minor maladies which make up the majority of practice and which the internist isn't geared to handle. It is true that the general public finds it increasingly difficult to find a general practitioner willing to handle night calls, but once again the reason for this state of affairs is fairly obvious. When the general practitioner is the friend and counsellor to the family he finds it almost impossible to refuse to get out of bed to see the patient, hence he makes the call. When the general practitioner is merely the guide to a directory of specialists in a family where daddy had his cardiologist, mother her gynecologist, junior his pediatrician and otolaryngologist, grandpa his psychiatrist and grandma her lay reader and surgeon he finds it easy to refuse to go out at 4 a.m. He has had relatively little contact with the people, economically they mean little to him, and he would rather let one of the battery just mentioned bail out the particular member of the family who may be in need of care.

When medicine arrives at a point where assembly line techniques are all that is necessary when individual attention is no longer needed, when scientific tables explain everything, when physical and chemical means are effective against all ills, then the jack of all trades will no longer be necessary. We may then bury Caesar!

At that time each man should be trained intensively in his own specialty, the humanities may be completely ignored, and the general practitioner should no longer be allowed to practice at all. Until such time, he should be encouraged by his confreres, cultivated by his patients and protected by the hospitals, for he is a valuable member of the medical team who is in danger of becoming extinct before the millennium arrives.—Howard R. Seidenstein, M. D., in the Westchester (New York) Medical Bulletin, January 1954.

DOES YOUR PATIENT COME FIRST?

For some time there has been more and more apparent in this country, nay in the world, a tendency to place the job to be done secondary to the pay check. Nothing could be more dangerous. This country was made great by those who were determined to do a better job, and who worked with all their hearts to accomplish it. You must remember these men had much to lose personally. The Declaration of Independence and the Constitution were fashioned with loving care by men who took pride in making them the greatest documents of their time. They built a new nation which became strong because they built well. Likewise, the carpenter, the bricklayer, the blacksmith took great pride in what he did.

The medical profession has a proud heritage which goes back to ancient times. In days gone by the doctor was looked up to with profound respect, almost reverence. He was a healer without much specific medicine and with few tools. But he put his whole heart and soul into his patient. When he walked into the sickroom, Faith and Hope were at his elbow—Charity was probably looking over his shoulder, too. Devotion has always been one of the most common characteristics attributed to the medical profession. Devotion, and the ability to do great things with few tools if need be. We must continue to keep this ideal fresh. I am somewhat distressed by the tendency of many to be so concerned with the economics of medical practice. I fear that such concern may lead others to the conclusion that medicine is not so much a profession as a trade. I think it behooves us all to do our utmost to maintain the standards of our profession at the present level, keeping it always as our purpose to, practice better and better medicine, knowing that increased perfection is bound to bring its reward.

We are truly a county society working together. I hope we all continue to have faith in each other. Faith in the belief that the other fellow is doing his best just as we are. Faith that the other fellow is loyal to the ethics of our profession the same as we are. Such faith must serve to reassure us all that, no matter how dark it seems, we are all going along the road together. We never walk alone.—Norman H. Gardner, M. D., in retiring presidential address to Middlesex County Medical Society, Middletown, Conn.

Pathological Conference, Medical College of South Carolina

Dr. J. R. Paul, Jr.: (Conducting) Mr. Ellis will you present the protocol for today's case?

R. G. Ellis, Jr.: There are several questions which have been asked about this case and one concerns the heart. During the first admission the heart was not mentioned either positively or negatively by several examiners, but the junior student stated that it was not enlarged and that there were no murmurs. Another question concerns the examination of paracentesis fluid. The fluid removed on the first occasion was said to have shown diplococci resembling pneumococci but we have no report of a culture. Subsequent cultures showed 100% E. coli.

PROTOCOL

Present Illness: C. C. "Won't eat for about the last week". A two year old colored male admitted on 16 July, 1954. Apparently well until about January 19, 1954 when he developed "skin trouble" which was treated in hospital, but has persisted intermittently. Was seen by physician in June, 1954 with generalized edema which was ascribed to renal disease and treated with "liquid medicine". The edema regressed, but did not disappear. Productive cough three weeks before admission. Child became worse 6 days prior to admission with fever, cough and anorexia. Refused all foods, but took liquids. Was then treated with penicillin and terramycin and sent to hospital because fever persisted. Was said to have been crawling instead of walking since January, 1954. Patient had supposedly been on restricted diet for questionable period of time, consisting of oatmeal, eggs, and grits with no vegetables or fruits.

Previous History: Full term spontaneous delivery. Negro male, born at home. Birth weight 8.5 lbs. Breast fed for short period of time, then on evaporated milk-water formula. Later diet as above. Vitamins sporadically (?). Developed normally. Diphtheria-tetanus toxoid and pertussis vaccine 3 times. Varicella. No known exposure to contagion.

Family History: Parents and 3 older siblings living and well. No known familial disease or allergy. Mother treated for syphilis in 1946 or 1948.

Previous Hospital Admissions: 29 January, 1954 to 1 March, 1954. Colored male, 18 months old, weight 22.5 lbs., admitted with 5 day history of scaling eczematoid rash over face, scalp, ears, and neck. Severe crusting, weeping, and secondarily infected eruptions responded to local and systemic treatment. While in hospital had a fluctuating temperature course with irregular spikes to 100-101° and was noted to have an upper respiratory infection, peculiar blue discoloration of the gums, and profuse salivation. Hb. 9.5 gm. RBC 4.3 million, 24 hr. urine pos. for arsenic three times; highest 290 cc, 2.2 mg. Negative after treatment with BAL.

Clinic Visits: 9 March, 1954-T. 100.6 weight 21 lbs. Small maculopapular weeping lesions prominent mostly on face and neck, but some scattered over trunk and extremities. Enlarged tonsils and mucopurulent nasal discharge. Treated with Burow's solution. 12 March, 1954-T. 100.4 Weight 22 lbs. Dermatitis worse. Treated locally with tar and given Mull-soy (Soybean milk). 19 March, 1954-T. 100.0 Weight 20 lbs. Skin of neck and anterior chest improved. Lesions on face more extensive with crusting. Treated with multivitamins, soybean milk and sulfa compounds locally.

Physical: P 138, R. 48, BP 80/40-20 (?) Weight 17 lbs. *Aspect*—Marasmic, malnourished infant; inactive but apparently without sensorial depression. *Skin*—Dry scaling eczematoid dermatitis over entire body. Skin puffy with poor elasticity and pitting edema of extremities. *Eyes*—Periorbital fullness. Pale conjunctivae with what appears to be small hemorrhagic areas on right inferior conjunctival surface. *Pharynx and Mouth*—Pale spongy appearing mucous membranes. *Heart*—Markedly enlarged to mid-clavicular line and also questionably to right. Loud, grade II-III, systolic precordial murmur best heard at apex and also in axilla. No thrill. *Abdomen*—Liver four finger breadths below right costal margin.

Hospital Course: (Blood chemistry determinations are reported in milligrams per 100 ml. except where otherwise noted, red blood cells in millions, white blood cells in thousands and hemoglobin in grams.) *16 July, 1954* Hb. 5. RBC 2.01, WBC 32.8 L-11% M-2% P85% (N. F. 46%) W&K neg. Na. 304, K. 10.3, Urea nit. 16, Bl. sugar 182, Total protein 4.65 gm., Ca. 7.9, P. 1.7 A. P. and lateral chest films available. *17 July* T. spike to 100.4. 150 cc blood and I. V. fluids given. ECG available *18 July* T. spike to 101. 150 cc blood given. Urine-dark yellow acid, 1.018 albumin ++++, sugar +, WBC 6-8, RBC 3-4, casts + coarse granular, blood +. Patient vomited greenish material in A. M. At 1 P. M. noted to have marked abdominal distention with no peristalsis. Flat plate and barium enema. Wangensteen suction started. ECG available. 6 P. M. abdomen still distended, one peristaltic rush heard. Rectal: normal fecal material with questionable mass high up. Abdominal paracentesis after catheterization yielded 150+ ml. dark cloudy fluid with Gram positive cocci. *18 July* T. spike to 104.4 Hb. 7.5, RBC 3.0, WBC 19.9., CO_2 70, Cl. 460, Ca. 9.8, Cholesterol 98. Abdomen still distended and patient quite edematous. I. V. fluids and suction. Condition extremely poor. Stool showed occult blood ++++. 24 hour urine 105 ml., 0.44 mg. arsenic. *20 July* T. spike to 105.4. Condition very poor, moribund. Barium enema and abdominal film done. Sickle cell study neg. after 72 hours. *21 July* T. spike to 105.6. Starting passing grossly bloody bowel movements. Na. 320, K.10.8, urea nitrogen 38, CO_2 78, Cl. 440, cholesterol 121. *22 July* T. spike to 101.2, Hb 8, RBC 3.3, WBC 15.0, urea nitrogen 29. *23 July* T. spike to 105 condition slightly better, still passing bloody stools. Patient noted to bleed excessively from all injection sites. *24 July* T. spike to 102. Paracentesis at noon; 500 ml. bloody fluid, some purulent-looking material. Generalized tenderness. No peristalsis. Abdomen tympanitic, anteriorly, but dull in flanks. Dark bloody stool. Rectal of no significance. Condition extremely grave. Flat and upright films of abdomen. Lab. work: Bleeding time over 1 hour, clotting time 3 minutes, prothrombin time 70%, platelets 103,000. KUB film. *25 July*—Exploratory laparotomy done. BP 40/0 at start. While closing abdomen BP became unobtainable and respiration ceased. Shortly thereafter cardiac action stopped.

Dr. Paul: Mr. Quevedo, would you like to come up and discuss this case?

Mr. A. G. Quevedo: At the time of the terminal admission we have a patient who had suffered from cough, persistent fever and edema for at least three weeks and the symptoms had not responded to penicillin or terramycin. At the time of the first admission, 7 months previously, it seems that a definite diagnosis of arsenic poisoning was made and therefore I should like to think of arsenic as a main cause of this patient's illness at the time of admission. Fever, anorexia, nausea and vomiting and peripheral edema can certainly be explained, along with the chronic dermatitis, on the basis of arsenic poisoning. But we cannot rule out certain other diseases. It is my impression that this patient probably suffered from a related or possibly unrelated episode of intestinal obstruction. With the history of edema and the story that the local physician thought that the patient had renal disease we must also consider, in addition to arsenic poisoning, the possibility of nephritis and rheumatic fever.

Dr. Paul: Let me ask you a few questions related to this case. How do you account for the cardiac enlargement? What evidence do you have for liver disease? What caused the intestinal obstruction? What systems are usually involved in chronic arsenic poisoning?

Mr. A. G. Guevedo: In cases of nephritis I do not know whether the edema has anything to do with cardiac enlargement or not but it is usually caused by hypertension. Of course, in this case, at the time of the last admission the blood pressure does not seem to be high. The evidence for liver disease includes the statement that the liver was found to be 4 finger breadths below the coastal margin and the fact that this patient had a low serum protein. As for the intestinal obstruction, I do not think it was related to the arsenic poisoning, the nephritis or the rheumatic fever, but it must have been due to some other cause such as intussusception or volvulus. The systems usually involved in chronic arsenic poisoning include the gastro-intestinal tract, the central nervous system and the liver. The kidney and heart may be involved, I think.

Dr. Paul: It is true that the endothelial system is generally damaged by chronic arsenic poisoning but I do not know of any well known cardiac damage ascribed to arsenic poisoning. You mentioned the possibility of nephritis in this case. What type of nephritis did you have in mind?

Mr. Quevedo: There are several sources of possible infection in this case. The child had a severe dermatitis and his general condition was poor so that he probably had a source of infection from the tonsils or upper respiratory tract. These sources of infection might have given rise to an acute glomerulonephritis. It is very difficult to determine the exact type because we have very little information but I should think that acute glomerulonephritis or possibly a toxic nep-

hrosis might have been present As a matter of fact I suppose it might be possible to explain the findings in this case on the basis of arsenic poisoning without presupposing a co-existent nephritis or rheumatic fever.

Dr. Paul: Mrs. DeVore, do you have any comment which you would like to make about this case?

Margaret B. DeVore: I put a little more emphasis on the heart than seems to have been done so far in this case. For one thing there was no evidence of a murmur at the previous admission and apparently no evidence of cardiac enlargement so that we must assume that something has happened to the heart between the first and second admissions. It is possible that this child developed an endocarditis.

Dr. Paul: Why should an infant suddenly develop endocarditis?

Mrs. DeVore: This child had a severe dermatitis and his general condition was poor due to chronic arsenic poisoning so that perhaps he was more subject to infections. Possibly he had a congenital heart lesion or maybe the whole situation can be explained on the basis of myocarditis due to arsenic poisoning.

Dr. Paul: I do not believe that myocarditis is attributable to arsenic poisoning. What evidence do you find in this protocol against the diagnosis of nephritis?

Mrs. DeVore: A low cholesterol as recorded on admission is definitely against the diagnosis of nephrosis. The presence of a low serum protein might suggest renal disease but the presence of a low serum protein with a low cholesterol level suggests liver disease.

Dr. Paul: Mr. Lawandales, would you like to come to the front and examine the x-rays?

Mr. E. F. Lawandales: These films do not look very much like obstruction to me but it does look like there is a good deal of fluid in the peritoneal space. The distance between the loops of bowel also suggests the presence of fluid. I suppose the fact that the child was having intestinal aspiration might have obscured evidence of obstruction. The later films including barium enemas seem to rule out the colon as a source of obstruction.

Dr. Paul: Dr. Gazes, Mr. Lawandales has examined these electrocardiograms and admittedly they are of poor quality in this projection. Would you care to make any comment about the cardiographic findings?

Dr. Gazes: There is evidence of sinus tachycardia but nothing of any definite significance otherwise. The evidence of right ventricular predominence might be considered important in an older patient but this is frequently persistent in children up to six years of age.

Dr. Paul: Mr. Lawandales, what do you have to say about the abdominal findings?

Mr. Lawandales: The findings described could be due to a perforated viscus but there is no evidence to substantiate this. If there were a paralytic ileus one would expect dilation of the intestinal tract, but of course the absence of this finding has already been explained. Of the diseases previously mentioned, one is frequently associated with peritonitis and that is nephrosis. In such cases the organism found is usually the pneumococcus. One of the other diseases previously mentioned might possibly cause intestinal obstruction through emboli with infarction of the bowel. I am referring to subacute bacterial endocarditis.

Dr. Paul: Are there any questions from the students?

Question: Were any blood cultures reported?

Dr. Paul: If blood cultures were done, we have no reports on our records.

Dr. Paul: Dr. Robert Wilson has been interested in the problem of arsenic poisoning for some time and I should like to ask him to make some comment upon this case.

Dr. Robert Wilson, Jr.: I am glad to say something about the general problem of chronic arsenic poisoning but I will not try to make a diagnosis in this case. Also, I am glad to say that you can't ask me any questions such as have been asked the students this afternoon.

One of the common effects of arsenic poisoning is upon the central nervous system. We have no evidence of convulsions in this child and although there is the statement that the child has been crawling instead of walking since January we have no certain evidence of peripheral nerve involvement. Arsenic usually affects the liver but this is commonly seen after poisoning with the organic arsenicals and the result resembles acute yellow atrophy. In the absence of jaundice there is some doubt whether liver damage in this case is due to arsenic. The hemopoietic system is commonly affected, but again this is usually associated with the organic arsenicals and the affect is usually anemia. The gastro-intestinal tract is commonly affected by arsenic and in acute cases it takes the form of an acute gastritis. In chronic cases the effect upon the gastro-intestinal tract may be similar, but much milder, and eventually nutritional disturbances may result. The skin is usually involved in chronic arsenic poisoning and, of course, in this case it is possible that arsenic was the cause of the dermatitis. Usually the kidney is relatively free from damage in chronic arsenic poisoning. The arsenic which was present in the urine during the first admission disappeared under treatment and I doubt if arsenic poisoning had very much to do with the patient's death.

Dr. Paul: Dr. Gazes, do you have any comment?

Dr. Gazes: Myocardial involvement is very rare as a result of chronic arsenic poisoning. Rheumatic heart disease and congenital heart disease have been mentioned as possible factors in this case. The patient is very young for the diagnosis of rheumatic heart disease and, of the congenital heart lesions resulting in death at this age, those usually encountered are associated with cyanosis. There are two conditions which should be considered, however, and they are aortic stenosis and endocardial fibrosis. Aortic stenosis seems unlikely here because one would expect more evidence of left ventricular enlargement and left heart failure. Endocardial fibrosis seems more likely in this case.

This relatively uncommon cardiac lesion is frequently associated with mural thrombosis and multiple emboli, a situation which might explain some of this patient's difficulties.

Dr. Paul: Dr. McCord, will you make some comment about the laboratory determinations and sources of arsenic?

Dr. W. M. McCord: The presence of arsenic in a sample of urine as received in the laboratory does not necessarily imply arsenic poisoning. There are many possible sources of error. Contamination with tap water, for example, might give a false high reading. On the other hand, failure to collect a full 24 hour specimen might result in a false low reading. If the specimen is properly collected and analyzed, a second point of great importance is the variability of sensitivity among different patients. An arsenic level which produces little effect upon one patient may have a profound effect upon another. Furthermore, the manner in which a toxic arsenic level affects different patients may vary considerably. In one patient the intestinal tract may be primarily affected, in another the liver, in others the central nervous system and in still others the hemopoietic system. Experience has shown that patients suffering from chronic arsenic poisoning are more apt to be from rural areas and this can probably be related to the use of insecticides containing arsenic. After the dusting season lead arsenate finds its way into food and water supplies. In this case I believe that the patient suffered originally from arsenic poisoning but that some secondary infection assumed the important role later.

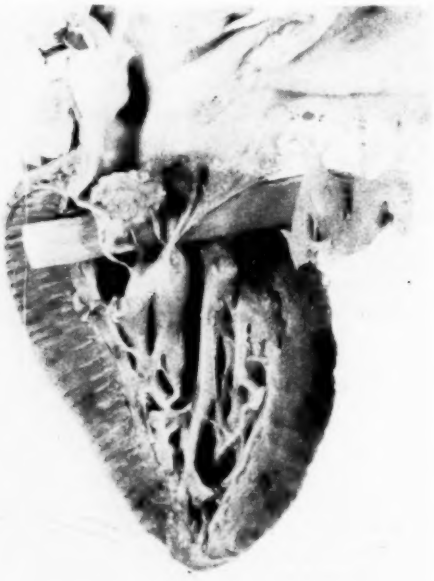

Figure 1.—Portion of heart. The tongue blade passes behind a cusp of the mitral valve upon the left margin of which can be seen the largest vegetation.

Figure 2.—Cut surface of spleen. The massive areas of septic infarction are seen to involve most of the splenic substances.

Dr. Paul: Time is drawing to a close and we turn the remainder of the period over to Dr. McIver.

Dr. McIver: The final pathological diagnosis of this case is *Subacute Bacterial Endocarditis With Septic Infarcts of Spleen and Kidney. Peritonitis, Acute and Organizing.* We shall attempt to show a little later that there may also have been septic infarction of the intestine. The first picture (Fig. 1) shows a portion of the left atrium and left ventricle. The tongue blade passes behind the cusps of the mitral valve, upon the auricular surface of which can be seen large vegetations. It is from such vegetations as these that emboli originate, and the next picture (Fig. 2) shows massive necrosis of the spleen which has resulted from septic

Figure 3.—Cut surface of kidney. The dark lines surrounding areas of septic infarction represent marginal hemorrhage and inflammatory reaction.

infarction of that organ. The third picture (Fig. 3) shows similar septic infarction of the kidney. This child undoubtedly died from the complications of subacute bacterial endocarditis and from an overwhelming generalized peritonitis. At surgery the intestinal lesion was described as being black and gangrenous. It was assumed to have resulted from a volvulus but it was noted that the involved loop of bowel was not twisted so much as would have been expected. In view of the subsequent findings, a very serious question exists as to whether the intestinal lesion described at surgery was, in fact, a volvulus or whether it was, instead, due to embolization from a valvular vegetation with infarction. I believe that the latter is the case and that histologic sections show the peritonitis to be of sufficient age to presume that the intestinal infarction occurred several days before death, perhaps on the third hospital day when symptoms became more severe and the abdomen was noted to be distended.

No specific evidence of chronic arsenic poisoning is anticipated nor is any found Tissues examined for arsenic were reported to be negative but this is as one would expect following treatment with BAL. Since the usual cardiac lesions, such as rheumatic endocarditis or congenital deformity, upon which subacute bacterial endocarditis is superimposed are not found, we must seek some other explanation. It is true that in very rare instances subacute bacterial endocarditis is said to occur on a previously undamaged heart but it is interesting to speculate upon other possibilities. I do not know of other cases in which subacute endocarditis has developed on the basis of endothelial damage due to arsenic poisoning, but it is general knowledge that one of the chief manifestations of arsenical damage is a widespread endothelial injury. It does not seem unreasonable to me that a bacteremia resulting from this child's persistent dermatitis might have implanted itself upon a mitral valve with an endothelial surface damaged by chronic arsenic poisoning. Blood cultures are not available, but a Gram stain of the mitral vegetation shows large Gram positive cocci which commonly occur in pairs and occasionally form short chains. A definite diagnosis cannot be made from this morphology alone, but these findings are consistent with enterococcal infection, one of the more common causes of subacute bacterial endocarditis.

In any patient with a cardiac murmur and persistent fever, the diagnosis of subacute bacterial endocarditis must be considered. To place emphasis upon this general rule may perhaps be the chief value of today's case.

Dr. Pratt-Thomas: I should like to comment that this case points up a tremendous medico-legal problem. With Dr. McCord and the clinicians seeing more and more of these cases, one should have no difficulty in imagining the difficulty which might originate from the discovery of arsenic in the tissues of a patient dead from some unknown cause. The question immediately arises as to whether this represents a case of poisoning or a fortuitous finding. It is necessary to draw the line somewhere, but the decision may be difficult.

ANNOUNCEMENTS

MEET YOUR COLLEAGUES ALONG THE BOARDWALK!

Physicians attending the AMA's 104th Annual Meeting June 6-10 in Atlantic City may not have much time for casual strolling along the boardwalk, but they'll find ample opportunity for catching up on the latest discoveries in medicine. AMA has lined up nearly five full days of lectures, scientific and technical exhibits and color television and motion picture presentations to give you a good "short course" in postgraduate medical education. Between 13,000 and 16,000 physicians are expected to attend the convention which will center its activities in the Atlantic City Auditorium and adjacent hotels. Headquarters

will be at the Traymore hotel where the House of Delegates will convene.

The 54th Annual Meeting of the American Proctologic Society will be held at the Hotel Statler, New York City from June 1-4, 1955, it is announced by A. W. Martin Marino, M. D., of Brooklyn, N. Y., President of the nation's oldest specialty in the field of proctology. All meetings are open to the medical profession.

DUKE MEDICAL
POST GRADUATE COURSE
Duke University, Durham, N. C.
June 20, 21, 22, 23, 1955

Monday, June 20

9:00 A.M. The Home Treatment of the Patient with Pulmonary Tuberculosis. Dr. Menefee.
10:00 A.M. A Discussion of Asthma and the Postural Syndrome. Dr. Hansen-Pruss.
11:00 A.M. The Identification of the Common Pathogenic Fungi. Dr. Conant.
2:00 P.M. Ward Rounds or Visit to the Clinics.
7:30 P.M. Informal Discussion: Subject: "The Anxious Patient." Dr. Persons, Leader; Dr. Busse and Dr. Shingleton.

Tuesday, June 21

9:00 A.M. The Pathological Changes in Obstructive Pulmonary Disease. Dr. Forbus.
10:00 A.M.-11:00 A.M. Inhalation Therapy in Obstructive Pulmonary Disease. Drs. Hickam, Menefee, and Stephen.
2:00 P.M. Ward Rounds or Visit to the Out-Patient Clinics.
7:30 P.M. Informal Discussion: Subject: "Vertigo." Dr. Arnold, Leader; Dr. Odom and Dr. Pfeiffer.

Wednesday, June 22

9:00 A.M. The Relationship of the Upper Respiratory Infections to Pulmonary Disease. Dr. Eagle.
10:00 A.M. The Indications for Pulmonary Surgery. Dr. Sealy.
11:00 A.M. The Therapy of Pulmonary Bacterial Infections. Dr. Martin.
2:00 P.M. Ward Rounds or Visit to the Clinics.
6:30 P.M. Dinner. Guest of the Faculty of the Medical School.

Thursday, June 23

9:00 A.M. The Medical Therapy of Tic Douloureux. Dr. Woodhall.
10:00 A.M. A Discussion of Lesions of the Breast. Dr. Gardner.
11:00 A.M. Recent Advances in the Therapy of Peptic Ulcer. Dr. Ruffin.
2:00 P.M. Ward Rounds or Visit to the Clinics.

BLUE CROSS . . . BLUE SHIELD

Two recent rulings with regard to the cooperative payment required of Blue Cross subscribers admitted to hospitals will be interesting. They are:

1. When a subscriber is transferred directly from one member hospital to another, this is considered to be a continuous period of hospital care and the cooperative payment is collected by the first hospital only. The second hospital provides full benefits from the time of admission. This applies only in cases where the subscriber is *transferred* to another hospital, and does not apply in cases when the subscriber has been discharged from one hospital and admitted later to another one.
2. When a maternity case is admitted on several occasions prior to delivery for false labor or other conditions caused by pregnancy, no more than 2 days will be collected by the hospital as the cooperative payment, regardless of the number of admissions. In other words, all the admissions that occur in connection with any single pregnancy are to be considered to be part of one single hospitalization.

* * *

In the future any hospital or clinic seeking a contract with Blue Cross as a member hospital will be inspected by a committee selected by the Blue Cross Board. The purpose of the inspection is to ascertain whether or not the applicant hospital or clinic is prepared to give true hospital service and reliable care to its patients and to learn whether its accounting practices are such that they reflect accurately patients' hospital costs.

Some things which will receive attention are: Reliability of laboratory examinations, technical quality, and therefore value to the patient, of x-ray films, and whether or not their interpretation is reliable and can be depended upon; care with which patients' charts are kept and whether or not these reliably record the history of the present complaint, the treatment administered, and the results of examinations; whether or not there is 24 hour supervision by a registered nurse; the character of the staff organization; the equipment and staff personnel of the operating room in relationship to the types of surgery undertaken.

Since Blue Cross pays to hospitals on either the per diem cost basis or upon the basis of patient's billing it is necessary that accounting practices accurately reflect per diem costs, and that unnecessary and unused equipment or personnel do not increase unduly per

diem costs and that the patient's bill is not unnecessarily padded with charges for unnecessary or non-indicated examinations and services, and that provision be made for reliable tests and examinations.

A contract with Blue Cross services is an implied mark of approval of the hospital, and our subscribers are likely to so accept it.

One of the reasons for the high cost of medical care, in my studied opinion, is the widely practiced excessive use of expensive laboratory procedures, often without a carefully recorded history, often in acute, rather minor, self-limited illnesses, before simple examinations have been carried out, and far too often, where there is no one available to interpret the laboratory, x-ray, ECG and other findings of a highly technical nature. There is still a place in practice for skilled consultation. Such consultation is not often sought in seemingly minor and usually self-limited illnesses. Wouldn't it be just as reasonable to defer various expensive laboratory procedures and especially when skilful interpretation is not readily available until lapse of time and failure of simple treatment indicated their advisability.

J. DECHERD GUESS,
Medical Director

NEWS

Dr. David Wilson of Greenville was elected president of the South Carolina Surgical Society at its annual meeting in Florence.

Also elected was Dr. Angus Hinson of Rock Hill as vice president and Dr. Robert Thomason of Greenville was re-elected as secretary-treasurer.

Dr. Myers Hicks of Florence has passed the examinations of the American Board of Internal Medicine.

Dr. Hicks is serving a two year tour of duty in the medical corps of the Army.

Citizens of Abbeville and Calhoun Falls will be pleased to learn that Dr. Andrew A. Manning, Jr., a native of Spartanburg, has decided to locate there.

He won his M. D. degree from Temple University in 1950, and since then has served in several hospitals. He interned at Charity Hospital, New Orleans; was assistant resident at Grady Hospital in Atlanta, and resident physician in Columbia Hospital, Columbia.

Dr. A. C. Ward, who will leave Calhoun Falls on April 1 to assume an executive post at Veterans Hospital, Augusta, announced Tuesday that Dr. Lincoln Patrick Elam of Lincolnton, Ga., will locate there for the practice of medicine.

Dr. John Leake Pitts, Jr. and Dr. B. Daniel White have opened offices together for the practice of general pediatrics with special interest in rheumatic fever and congenital heart disease.

Dr. James E. Barnett, native of Marietta, will join Dr. John H. Holliday and Dr. Landrum I. McCarrell in their medical practice in Travelers Rest beginning July 1, the two physicians announced.

Dr. W. S. A. Harris has announced the opening of his offices for the practice of general medicine at Kings Highway and 18th Avenue, North, Myrtle Beach.

Dr. Harris, formerly of Kentucky, has had two years of general practice in addition to two years of practice in the Army Medical Corps.

He is a graduate of the University of Louisville School of Medicine, class of 1948. In addition he has had special training in pathology and general surgery.

The Southeastern Allergy Association elected Dr. Ben Miller of Columbia, president.

Other new officers include: Dr. Katherine B. MacInnis, Columbia.

Dr. Eugene Y. Smith, Jr. has returned to Charleston from Naples, Italy, after serving three years with the Navy. He will be associated with Dr. W. Atmar Smith in the practice of medicine at 151 Wentworth St.

Dr. Eugene Smith was graduated from The Citadel and from the Medical College of South Carolina in 1948. For four years he was associated with the Cincinnati General Hospital.

Dr. R. P. Sandidge, surgeon of the U. S. Public Health Service, has been named head of the Charleston office.

Dr. Edmund R. Taylor is returning to Columbia to begin the practice of surgery. He is a native of Columbia and lived there during his childhood. He received his medical degree from Johns Hopkins Medical School in 1941. There then followed an internship in surgery at the Roosevelt Hospital in New York City.

When World War II started Doctor Taylor was sent to the European theater with the 9th Evacuation hospital as a surgeon where he served for 3½ years. After the war, he took four years of additional training in surgery at the Mayo Clinic. For the past five years he has practiced surgery in Durham, N. C.

Doctor Taylor is a fellow of the American College of Surgeons and is certified by the American Board of Surgery and the Board of Thoracic Surgery.

He has opened his office at 1515 Bull St. His practice will be confined to general and thoracic surgery.

Dr. Douglas H. Sprunt delivered the annual Alpha Omega Alpha lecture in Baruch Auditorium at the Medical College, on "The Laboratory in the Early Detection of Cancer." Eight seniors and three juniors were initiated.

The chapter has announced the election of Dr. Edward W. Lowman as an honorary member. Dr. Lowman, a 1940 graduate of the Medical College, now is in charge of the division of physical medicine and rehabilitation at New York University's Bellevue Medical Center. The chapter each year names an outstanding alumnus to membership.

The fraternity, regarded as the "Phi Beta Kappa" of Medical schools, was established at the Medical College in 1952. Walter Morse Bonner, Jr. a senior student from Moncks Corner, is president. Joseph O. Beasley, Jr. of Charleston is vice president and Mrs. Margaret Bowen DeVore of Troy is treasurer. Dr. John T. Cuttino, dean of the Medical College, is faculty adviser and Dr. Henry W. Mayo, Jr., a faculty member, is secretary. Membership is based primarily on scholarship, integrity and character.

Senior students initiated are Eleas Frank Lawandales of Charleston; Travis Brown Stevenson, Jr. of Walterboro; John Riser Scott of Whitmire; Daniel Brunson Nunn of Columbia; Roland LeRoy Skinner, Jr. of Orangeburg; Frank Micaja Purnell of Spartanburg; Thomas Charles Mann of Greenville; and Richard Anderson Steadman of Ridge Spring.

Juniors initiated are Henry Woodrow Rittenburg of Branchville; Paul David Boone of Rock Hill and James Caulie Gunnells, Jr. of Greenwood.

Dr. Harvey P. Graham, recently of Hamlet, N. C., leased a building at 205 Main Street in Chesterfield where he has begun the general practice of medicine.

Dr. Graham was born in Newburgh, New York in 1917. He attended New York State grade school and high school. His schooling was interrupted by World War II.

He entered the service during the war and served five years in the South Pacific area as a Lieutenant in the Engineers.

After the war Dr. Graham entered Duke University at Durham, N. C., from which he was graduated *summa cum laude* in 1948. He then entered Duke Medical School and graduated in 1952. While attending Duke he was a member of Phi Beta Kappa, Phi Eta Sigma, Phi Chi Medical Fraternity, and Phi Mu Epsilon Honorary Fraternity.

After graduating from Duke Medical College, Dr. Graham interned as follows: Rotating at Valley Forge General Hospital; Army: Served as Battalion Surgeon in England for nine months with an Anti-Aircraft Battalion. Then was transferred to Germany to the 97th General Hospital where he served in both the Medical and Dermatology Clinics.

Dr. R. W. Ball was a member of a panel discussion of Selective Testing Programs at the Venereal Disease Control Seminar at Miami Beach on April 20.

Joseph C. Bunten, M. D., announces the opening of his office for the practice of general surgery at 405 Ribaut Road, Beaufort, South Carolina.

DEATHS

DR. B. W. KENDALL
Died in March 1955

Dr. Kendall was a native of Columbia, a son of the late Dr. Francis D. and Louisa Berrine Williams Kendall, and a medical graduate of Tulane University in the cass of 1922. He interned at Charity Hospital, New Orleans, La., and did postgraduate work at St. Luke's Hospital, New York City. He practiced medicine for eight years in West Virginia before coming to Columbia in 1928. He retired in 1945.

He was a World War I veteran, serving in the Medical Corps of the Army. He was a member of the American Legion, a Mason and a Shriner.

DR. HOMER ATTAWAY McELROY

Dr. Homer Attaway McElroy, 70, senior physician at the Negro division of the South Carolina State Hospital, died unexpectedly March 24.

DR. JAMES THOMAS CARTER

Dr. James Thomas Carter of 16 Woodburn Road died in his sleep at his home March 24.

Dr. Carter, one of Spartanburg County's prominent physicians for years prior to retirement in 1950, was born at Mars Bluff, Florence County.

He was educated at the old Wofford Fitting School, the College of Charleston and the Medical College of South Carolina. He practiced at Orangeburg County and Bamberg for a number of years. He studied the eye, ear, nose and throat at the Chicago Ill., Polyclinic and the eye and ear at the Manhattan, N. Y., Hospital and at Mayo Clinic, Rochester, Minn.

Dr. Carter came to Spartanburg in June in 1926 and was the first occupant of the Montgomery building where he maintained his office until his retirement in 1950.

He was a surgeon for the Southern Railway for a number of years. Dr. Carter was a former president of the Spartanburg Medical Society.

BOOK REVIEWS

STANDARD VALUES IN NUTRITION AND METABOLISM—Edited by Errett C. Albritton, M.D., Fry Professor of Physiology, The George Washington University. Prepared under the direction of the Committee on the Handbook of Biological Data, American Institute of Biological Sciences, The National Research Council. W. B. Saunders Company, Philadelphia. $6.50.

More than 800 specialists in this country and abroad worked to compile information which was condensed and set up in tabular form in this book of

DRAMAMINE® IN VERTIGO

1. Bárány Pointing Test. *The patient points at a stationary object, first with his eyes open and then closed. A constant error in pointing (past pointing) with his eyes closed in the presence of vertigo indicates peripheral labyrinthine disease or an intracranial lesion.*

2. The Caloric (Bárány) Test. *The patient sits with his eyes fixed on a stationary object and the external ear canal is irrigated with hot (110 to 120 F.) or cold (68 F.) water. If the vestibular nerve or labyrinth is destroyed, nystagmus is not produced on testing the diseased side.*

3. The Rotation (swivel chair) Test. *The patient sits in a swivel chair with his eyes closed and his head on a level plane. The chair is turned through ten complete revolutions in twenty seconds. Stimulation of a normal labyrinth will cause nystagmus, past pointing of the arms and subjective vertigo.*

Notes on the Diagnosis and Management of "Dizziness"

I. Vertigo

The term "dizziness" (vertigo) should be restricted to the sensation of whirling or a sense of motion.[1] This sensation is usually of organic origin and is the tangible symptom of a specific pathology.

Moderate vertigo, with a sense of motion and a whirling sensation, may be produced by infection, trauma or allergy of the external or middle ear. Examination of the ear will usually disclose the abnormality.

Severe vertigo, which will not permit the patient to stand and causes nausea and vomiting, indicates an irritation or destruction of the labyrinth. The specific condition may be labyrinthine hydrops, an acute toxic infection, hemorrhage or venospasm of the labyrinth or a fracture of the labyrinth. Multiple sclerosis and pathology of the brain stem should be considered also.

It is important to learn if the patient's sensation is continuous or paroxysmal.[2] Paroxysmal vertigo suggests specific conditions: Ménière's syndrome, cardiac disease and epilepsy. Continuous vertigo without a pattern may be due to severe anemia, posterior fossa tumor or eye muscle imbalance.

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1. Swartout, R., III, and Gunther, K.: "Dizziness:" Vertigo and Syncope, GP *8*:35 (Nov.) 1953.

2. DeWeese, D. D.: Symposium: Medical Management of Dizziness: The Importance of Accurate Diagnosis, Tr. Am. Acad. Ophth. *58*:694 (Sept.-Oct.) 1954.

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HEMORRHAGE OF LATE PREGNANCY: By John S. Fish, M. D., Emory University School of Medicine, Atlanta, Georgia. $5.50. Pp 192, with 22 illustrations. Charles C. Thomas, Springfield, Illinois.

This is a small book covering the subject of hemorrhage of late pregnancy, with views and opinions of the Bartholomew Clinic in Atlanta, Georgia, being emphasized.

The subject is completely covered, the illustrations are good, and the diagnosis and treatment of the various causes of hemorrhage are clearly defined.

The subject of rupture of the marginal sinus expresses the views of the Bartholomew Clinic, with adequate evidence to justify its importance.

It was of interest to note that it was felt, that rupture of the marginal sinus in either the normally or abnormally implanted placenta accounted for over one third of the cases of third trimester hemorrhage.

Concluding the work is an excellent bibliography, tables, and fourteen case histories of each complicating type of hemorrhage.

This small valume brings the subject matter up to date, and will be a valuable reference in the hands of a physician concerned with obstetrics.

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REPRODUCTIVE SYSTEM, Frank H. Netter, M. D., The Ciba Collection of Medical Illustrations, Ciba Pharmaceutical Products, Inc., 286 Pages, 233 Plates. $13.00.

The medical profession is familiar with the quality and accuracy of Frank Netter's illustrations through scientific texts, as well as the advertising media. The collection and publication of his illustrations of the reproductive system is a step forward in the visual educational field. This excellent book could not have been prepared without the help of his collaborators, whose accompanying succinct and accurate verbal descriptions of the anatomy, physiology, endocrinology, embryology, and pathology of the reproductive system add much to the book.

Of particular interest is the endocrinology of the reproductive system. It is well illustrated in that the relationships of the hormones one to the other is shown, with the end result on the human body. One does not have to imagine what an excess of androgens, estrogens, etc. will cause, for one can see the results in brilliantly executed plates. The normal and abnormal physiology is likewise illustrated, so that one can understand quickly the various hormonal influences to which the body as a whole, and the individual organs are subjected.

This is a book for a medical student, the busy physician, the specialist, and anyone interested in the reproductive processes. It has been a distinct pleasure to peruse this outstanding contribution to the medical literature.

Lawrence L. Hester, Jr., M. D.

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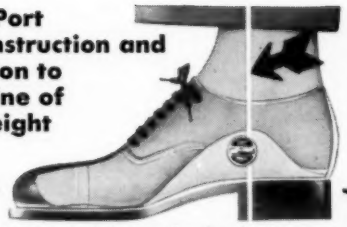

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THE KIDNEY (A Ciba Foundation Symposium) Editor for the Renal Association, A. A. G. Lewis. Editor for the Ciba Foundation, G. E. W. Wolstenholme.

"The Kidney" embodies a verbatim account of the proceedings at an international symposium arranged jointly by the Ciba Foundation and the Renal Association held in London in July 1953. The papers in this book represent current thought in research and renal physiology and anatomy written by the outstanding workers of many countries.

The anatomy of the kidney is such that simple methods of investigation of its structure and function have been precluded. Renal research has challenged men of unusual cleverness and depth who not only have been able to devise methods for solving their intriguing problems, but who are able to talk and write in a manner unusual in the pure investigator.

Such writers are Jean Oliver, Fleming, Raaschou, E. M. Darmady, and H. Wirz whose papers comprise the sections of the book discussing structural and functional relationships.

Most interesting of this group of papers, because it introduced a new concept to this reviewer, was Wirz's on concentration of urine. To determine osmolarity of urine in various positions of the tubules, melting points were done by noting the temperature of disappearance of ice crystals in specific areas of frozen kidney section. By this method final concentration was found to occur in the collecting tubules heretofore considered a physiologically inert area. The ensuing discussion is of interest in that criticism is directed toward a mechanical device constructed by Wirz to explain his results, but none is directed to his method.

S. E. Bradley, J. V. Taggart, P. P. Lambert, F. C. Reubi present papers on tubular functions other than the regulation of acid-base balance. Renal share in the regulation of acid-base balance is also discussed by outstanding workers in the fields, J. L. Robinson, Robert F. Pitts, Robert W. Berliner, and P. H. Sanderson

Sanderson's paper discusses renal response to massive alkali loading. When this was done symptoms ascribed in the past to alkalosis were not seen. Nitrogen retention did not occur and renal damage was not observed. He states that the most probable explanation of the nephropathies seen in clinical alkalosis is gross dehydration with ischemic lesions either reversible or permanent. The possibility that long continued alkalosis without dehydration could cause renal damage could not be excluded.

Another most interesting discussion concerning fluid balance in anuria is by Jean Hamberger and G. Mathe. They state that when an anuric subject is given as much water as the insensible water loss, the proportion of water in the body rises due to increased production of water derived from increase of catabolism. This increase affects the intracellular fluid while extracellular fluid volume seems to diminish. The clinical implications are discussed.

The papers presented in The Kidney are too numerous to be reviewed in detail. However, they are all of interest to any physician interested in renal physiology or the general problem of fluid and electrolyte balance.

Arthur Williams

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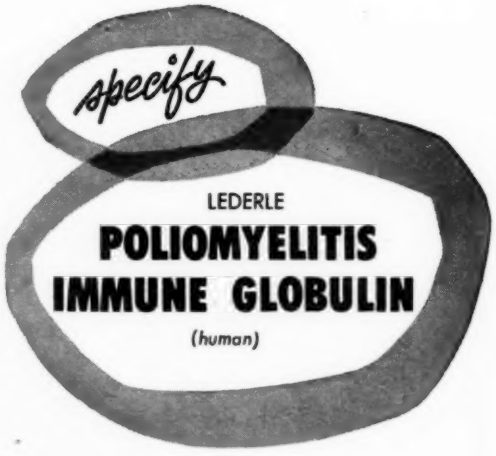

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